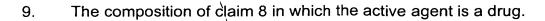
## **CLAIMS**

## What is claimed is:

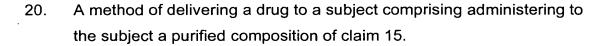
1. A retro-inverted peptide or a derivative thereof that specifically binds to a gastro-intestinal tract receptor selected from the group consisting of HPT1, hPEPT1, D2H, and hSI.

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- 2. The retro-inverted peptide of claim 1 in which the peptide comprises an amino acid sequence selected from the group consisting of ZEIan144, ZEIan145 or ZEIan 146 or a binding portion thereof.
- 3. A retro-inverted peptide that enhances delivery of an active agent across the gastro-intestinal tract into the systemic, portal or hepatic circulation.
- 4. The peptide of claim 1, wherein the peptide comprises no more than 50 amino acid residues.
- 5. The peptide of claim 1, wherein the peptide comprises no more than 40 amino acid residues.
- 6. The peptide of claim 1, wherein the peptide comprises no more than 30 amino acid residues.
- 7. The peptide of claim 1, wherein the peptide comprises no more than 20 amino acid residues.
- 8. A composition comprising the peptide of claim 1 bound to a material comprising an active agent, said active agent being of value in the treatment of a mammalian disease or disorder.



- 10. The composition of claim 8 in which the material is a particle containing the active agent.
- 11. The composition of claim 8 in which the material is a slow-release device containing the drug.
- 12. The composition of claim 8 in which the peptide is covalently or noncovalently bound to the material.
- 13. A composition comprising a chimeric protein bound to a material comprising an active agent, in which the chimeric protein comprises a sequence selected from the group consisting ZElan144, ZElan145 or ZElan 146 or a binding portion thereof fused via a covalent bond to an amino acid sequence of a second protein, in which the active agent is of value in the treatment of a mammalian disease or disorder.
- 14. A composition comprising the peptide of claim 1 non-covalently bound to a particle containing a drug.
- 15. A composition comprising the peptide of claim 1 covalently bound to a drug.
- 16. The composition of claim 8 which facilitates the transport of the active agent through human or animal gastro-intestinal tissue.
- 17. The composition of claim 8 which targets the active agent to a selected site or selected tissue in a human or animal.
- 18. A method of delivering an active agent *in vivo* comprising administering to a subject a purified composition of claim 8.
- 19. A method of delivering a drug to a subject comprising administering to the subject a purified composition of claim 14.



- 21. The method according to claim 18 in which the administering is oral.
- 22. The method according to claim 18 in which the active agent is a drug.
- 23. The method according to claim 18 in which the subject is a human.
- 24. The method according to claim 21 in which the subject is a human.
- 25. The method according to claim 18 in which said composition facilitates the transport of the active agent through human or animal gastro-intestinal tissue.
- 26. The method according to claim 19 in which the administering is oral.
- A pharmaceutical composition comprising the composition of claim 8 in a pharmaceutically acceptable carrier suitable for use in humans in vivo.
- 28. An antibody which is capable of immunospecifically binding the peptide of claim 1.
- 29. A molecule comprising a fragment of the antibody of claim 28, which fragment is capable of immunospecifically binding said peptide.
- A purified derivative of the peptide of claim 1, which displays one or more functional activities of said peptide.
  - 31. The derivative of claim 30 which is able to be bound by an antibody directed against said peptide.



- 32. A fragment of the peptide of claim 2 comprising a domain of said peptide.
- 33. A fragment of the peptide of claim 3 comprising a domain of said peptide.
- 34. A pharmaceutical composition comprising a therapeutically effective amount of a composition comprising the peptide of claim 1 and a pharmaceutically acceptable carrier.
- 35. A method of treating or preventing a disease or disorder comprising administering to a subject in which such treatment or prevention is desired a therapeutically effective amount of the composition of claim 8.
- 36. A method of treating or preventing a disease or disorder comprising administering to a subject in which such treatment or prevention is desired a therapeutically effective amount of the composition of claim 14.
- 37. A method of treating or preventing a disease or disorder comprising administering to a subject in which such treatment or prevention is desired a therapeutically effective amount of the composition of claim 15.
- 38. The method according to claim 35 in which the disease or disorder is selected from the group consisting of: hypertension, diabetes, osteoporosis, hemophilia, anemia, cancer, migraines, and angina pectoris.
- 39. The method according to claim 38 in which the subject is a human.

- 40. A composition comprising the peptide of claim 1, wherein the peptide is coated onto or absorbed onto or covalently bonded to the surface of a nano- or microparticle.
- 41. A nano- or microparticle formed from the peptide of claim 1.
- 42. The composition of claim 40 wherein the nano- or microparticle is a drug-loaded or drug-encapsulating nano- or microparticle.
- 43. The composition of claim 8 in which the drug is insulin or leuprolide.

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